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PREDICTORS OF ANGIOGENIC THERAPY EFFECTIVENESS IN PATIENTS WITH CHRONIC LIMB ISCHEMIA

ACC Moderated Poster Contributions
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Session Title: Atherosclerosis and Angiogenesis: Basic and Translational Insights
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Background: Therapeutic angiogenesis is a new treatment option for patients with chronic limb ischemia who are not candidates for interventional treatment. Several studies show improvement of ischemia after angiogenic gene therapy, while others do not. Factors influencing the potency of angiogenic therapy are largely unknown.

Methods: 40 patients with Fontaine IIb-IV atherosclerotic limb ischemia and no option for surgery or angioplasty received vascular endothelial growth factor (VEGF) gene therapy (GT, n=20), blood-derived stem cell therapy (SC, n=5) or conventional treatment (CT, n=15). For the purpose of this study, treatment effect was assessed by treadmill test, ankle-brachial index, angiography, limb scintigraphy, transcutaneous oximetry and Walking Impairment Questionnaire. The levels of circulating endothelial progenitor cells (EPC), angiogenic growth factors, homocysteine, C-reactive protein were measured in all patients before treatment and during follow-up.

Results: 3 months after treatment only GT and SC patients demonstrated significant improvement of walking distance, everyday activity, ankle-brachial index and limb perfusion. 52% of patients had good treatment effect, 28% had modest effect, and 20% had no effect. In univariate analysis, Rutherford scale improvement was associated with inguinal artery patency, shorter claudication history, less duration of smoking and higher initial ankle-brachial index.

Conclusions: Angiogenic stimulation with VEGF-plasmid or blood-derived stem cells is overall effective in patients with chronic limb ischemia. Several clinical features are associated with treatment success possibly reflecting a role of hemodynamic forces and endothelial function in angiogenesis.